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Amendment dated Oct. 16, 2008
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Remarks

I.   Status of claims

Claims 1-6, 8-21, and 23-57 are pending.

Claims 7 and 22 have been canceled.

Of the pending claims, claims 1, 3-6, 8-12, 14-16, and 23 are rejected and claims 2, 13, 17-21, and 24-57 are allowed.

II.   Claim rejections under 35 U.S.C. § 103

A.   Introduction

"A patent may not be obtained ... if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. §103(a).

In an appeal involving a rejection under 35 U.S.C. § 103, an examiner bears the initial burden of establishing *prima facie* obviousness. See In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). To support a *prima facie* conclusion of obviousness, the prior art must disclose or suggest all the limitations of the claimed invention.[1] See In re Lowry, 32 F.3d 1579, 1582, 32 USPQ2d 1031, 1034 (Fed. Cir. 1994). If the examiner has established a *prima facie* case of obviousness, the burden of going forward then shifts to the applicant to overcome the *prima facie* case with argument and/or evidence. Obviousness, is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. This

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1 The U.S. Patent and Trademark Office has set forth the following definition of the requirements for establishing a *prima facie* case of unpatentability (37 CFR § 1.56(b)(ii):

> A prima facie case of unpatentability is established when the
> information compels a conclusion that a claim is unpatentable
> under the preponderance of evidence, burden-of-proof standard,
> giving each term in the claim its broadest reasonable construction
> consistent with the specification, and before any consideration is
> given to evidence which may be submitted in an attempt to
> establish a contrary conclusion of patentability.

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inquiry requires (a) determining the scope and contents of the prior art; (b) ascertaining the differences between the prior art and the claims in issue; (c) resolving the level of ordinary skill in the pertinent art; and (d) evaluating evidence of secondary consideration. See KSR Int'l Co. v. Teleflex Inc., No. 127 S. Ct. 1727, 1728 (2007) (citing Graham v. John Deere, 383 U.S. I, 17-18, 148 USPQ 459, 467 (1966)). If all claim limitations are found in a number of prior art references, the fact finder must determine whether there was an apparent reason to combine the known elements in the fashion claimed. See KSR, 1741. This analysis should be made explicit. KSR at 1741 (citing In re Kahn, 441 F. 3d 977, 988 (Fed. Cir. 2006): "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness").

B. The rejection of claims 1, 3-6, 8-12, 14-16, and 23 over Al-Hussein in view of Mahoney

The Examiner has rejected claims 1, 3-6, 8-12, 14-16, and 23 under 35 U.S.C. § 103(a) over Al-Hussein (US 5,818,978) in view of Mahoney (US 6,009,196).

1. Independent Claim 1

a. Introduction

Independent claim 1 recites:

> 1. A method of processing an image of elements, comprising:
>
> assigning each of multiple ones of the elements a respective element label selected from a set of at least three element labels that includes at least one edge element label;
>
> grouping spatially connected ones of the elements into respective blobs based on the element labels assigned to the elements, wherein each of the blobs is assigned a respective one of at least two blob labels; and
>
> processing ones of the elements based at least in part on the blob labels assigned to the blobs the and the element labels assigned to the elements.

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The rejection of independent claim 1 under 35 U.S.C. § 103(a) over Al-Hussein in view of Mahoney should be withdrawn because Al-Hussein in view of Mahoney, taken either alone or in any permissible combination, do not disclose or suggest all the elements of the claimed invention. The rejection of independent claim 1 also should be withdrawn because at the time the invention was made there was no apparent reason to combine the teachings of Al-Hussein in view of Mahoney in the manner proposed by the Examiner.

b.   The Examiner's position

In support of the rejection of claim 1, the Examiner has taken the following positions (see § 3 on pages 5-6 of the final Office action):

- Al-Hussein discloses the "assigning" element of claim 1 in col. 3, lines 54-56 and col. 2, lines 25-32;

- Al-Hussein does not disclose any of the "grouping" and "processing" elements of claim 1;

- Mahoney discloses the "grouping" element of claim 1 in FIG. 2, blocks 32 and 66, and col. 8, lines 62-68, ; and

- Mahoney discloses the "processing" element of claim 1 in col. 7, lines 6-15.

c.   Applicant's rebuttal: the cited references do not disclose each and every element of the invention defined in claim 1

i.   Introduction

The Examiner has acknowledged that "Al-Hussein dose not disclose grouping spatially connected ones of the elements into respective blobs based on the element labels assigned to the elements, wherein each of the blobs is assigned a respective one of at least two blob labels; and processing ones of the elements based at least in part on the blob labels assigned to the blobs the and the element labels assigned to the elements" (see § 3 on page 5, third ¶ of the final Office action). The Examiner, however, has taken the position that Al-Hussein discloses the assigning element of claim 1 un col. 3, lines 54-56 and col. 2,lines 25-32, and that Mahoney makes-up for Al-Hussein's failure to disclose or suggest the grouping and processing elements of claim 1.

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Contrary to the Examiner's assertion, however, Al-Hussein does not disclose or suggest the assigning element of claim 1, and Mahoney does not make-up for Al-Hussein's failure to disclose or suggest any of the grouping and processing elements of claim 1.

ii.   The cited references do not disclose or suggest the assigning element of claim 1

The Examiner has taken the position that Al-Hussein discloses "assigning each of multiple ones of the elements a respective element label selected from a set of at least three element labels that includes at least one edge element label" in col. 3, lines 54-56 and col. 2, lines 25-32 (see § 8 in last line of second ¶ of the Office action). Contrary to the Examiner's position, however, the cited sections of Al-Hussein's disclosure do not disclose or suggest "assigning each of multiple ones of the elements a respective element label selected from a set of at least three element labels that includes at least one edge element label."

In col. 3, lines 50-59, Al-Hussein discloses

> Binary images are obtained from gray-scale images by comparing each pixel in the gray-scale image to a global threshold so as to binarize each pixel. The global threshold is selected by forming a histogram of pixel intensities of the gray-scale image, the histogram being comprised of plural groups of pixel intensities such as eight groups. Based on group adjacency, the top two groups in the histogram that are separated by at least one histogram group are identified. The global threshold is calculated at an intermediate distance, such as one-half the distance, between the two top groups.

This disclosure does not disclose anything whatsoever about "assigning each of multiple ones of the elements a respective element label selected from a set of at least three element labels that includes at least one edge element label," as recited in claim 1. To the contrary, this disclosure explicitly describes a binarization process in which each pixel is assigned a respective label selected from a set of two pixel labels that will form the binary image. The details of the binarization process are explained in col. 17, line 21 - col. 18, line 16, in connection with FIGS> 12 and 13. In col. 18, lines 5-13, Al-Hussein explains that (emphasis added):

> In step S1207, the intensity of each pixel in the gray-scale images is compared to the global threshold calculated in step S1206 to

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binarize the gray-scale image. As shown in FIG. 12, if the comparison indicates that the pixel intensity is less than the global threshold, then the pixel is set to a binary "0" indicating that the pixel is white (step S1208). On the other hand, if the pixel intensity is higher than the global threshold, the pixel is set to a binary "1" indicating that the pixel is black (step S1209).

Thus, in col. 3, lines 50-59, Al-Hussein does not disclose "assigning each of multiple ones of the elements a respective element label selected from a set of at least three element labels," nor does Al-Hussein disclose anything about assigning an element of an image "at least one edge element label," as recited in claim 1.

In col. 2, lines 25-32, Al-Hussein merely states that scanning artifacts might cause gray-scale values to be assigned to pixels at the edges of characters. The cited disclosure would not have led one skilled in the art to assign "each of multiple ones of the elements a respective element label selected from a set of at least three element labels that includes at least one edge element label." Indeed, this disclosure does not even hint that pixels at character edges are detected, much less anything about labeling each such pixel with a respective element label selected from a set of at least three element labels that includes at least one edge element label.

The Examiner has not even attempted to show that Mahoney makes-up for the failure of Al-Hussein to disclose or suggest the assigning element of claim 1. This is not surprising since Mahoney does not disclose or suggest anything that would have led one skilled in the art to assign "each of multiple ones of the elements a respective element label selected from a set of at least three element labels that includes at least one edge element label," as recited in claim 1. Instead, Mahoney discloses that the pixels of the text blocks in the input image are represented by "binary" data (see, e.g., col. 7, lines 52-55: "The output of pre-processor 26 is two-fold: a binary mask image 28 or similar binary data array representing the pixels of the text blocks in the input image...").

Thus, neither Al-Hussein nor Mahoney discloses or suggests the "assigning" element of independent claim 1. For at least this reason, the rejection of independent claim 1 under 35 U.S.C. § 103(a) over Al-Hussein in view of Mahoney should be withdrawn.

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iii. The cited references do not disclose or suggest any of the grouping and processing elements of claim 1

Neither Al-Hussein nor Mahoney discloses or suggests "grouping spatially connected ones of the elements into respective blobs based on the labels assigned to the elements" where the element labels are "selected from a set of at least three element labels that includes at least one edge element label," as recited in claim 1.

As mentioned above, the Examiner has acknowledged that Al-Hussein fails to disclose or suggest the grouping and processing elements of claim 1 (see § 3 on page 5, third ¶, of the final Office action). Instead, Al-Hussein performs a connected components analysis based on a bi-level image in which each of the pixels is assigned either a block pixel label or a white pixel label (see, e.g., col. 18, line 18 - col. 19, line 15, of Al-Hussein). This process does not in any way involve grouping spatially connected ones of the elements into respective blobs based on at least three element labels that are assigned to the elements, nor does it involve processing ones of the elements based at least in part on the blob labels assigned to the blobs the and the element labels assigned to the elements.

With respect to Mahoney, the Examiner has taken the position that (see § 3, last ¶ on page 5 of the final Office action; emphasis added):

> Mahoney (196), in the same area of a document image capture method and an image processing (as shown in fig 1), teaches grouping spatially connected ones of the elements into respective blobs based on the element labels assigned to the elements, (pixels are classifying operation 66 of fig 2) wherein each of the blobs is assigned a respective one of at least two blob labels (the output from process 32 of fig 2 is set of connected components or "blob", see col.8, lines 62-68); and processing ones of the elements based at least in part on the blob labels assigned to the blobs the and the element labels assigned to the elements (see col.7, lines 6-15).

Contrary to the Examiner's statement, however, neither the classifying operation 66 in FIG. 2 nor the output from process 32 of FIG. 2 (which corresponds to the "blob" discussion in col. 8, lines 62-68), constitutes a disclosure of grouping spatially connected ones of the image elements into respective blobs based on at least three element labels (including at least one edge

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element label) that are assigned to the image elements, wherein each of the blobs is assigned a respective one of at least two blob labels.

In particular, the classifying process 66 involves extracting running text blocks from each of the groups 62 and placing non-running ones of the text blocks in the groups into contiguous regions (see col. 9, lines 47-54). This process does not involve grouping image elements based on a set of at least three element labels that includes at least one edge element label, wherein each of the blobs is assigned a respective one of at least two blob labels. Instead, this process involves classifying the text blocks within each of the groups 62 as either running text or non-running text based on a comparison of a ratio of gap area to block area for each block to a threshold (see block 166 of FIG. 4; col. 12, lines 59-65).

The output from process 32 in FIG. 2 (which corresponds to the "blob" discussion in col. 8, lines 62-68) "is a set of connected components or 'blobs' which preferably encompass a single running text paragraph" (col. 8, lines 62-67). This process does not involve grouping image elements based on a set of at least three element labels that includes at least one edge element label, wherein each of the blobs is assigned a respective one of at least two blob labels. Instead, this process involves classifying the text blocks within each of the groups 62 as either running text or non-running text based on a comparison of a ratio of gap area to block area for each block to a threshold (see block 166 of FIG. 4; col. 12, lines 59-65).

Thus, contrary to the Examiner's position, the cited sections of Mahoney's disclosure do not support the Examiner's position that Mahoney makes-up for the failure of Al-Hussein to disclose or suggest "grouping spatially connected ones of the elements into respective blobs based on the labels assigned to the elements" where the element labels are "selected from a set of at least three element labels that includes at least one edge element label," as recited in claim 1.

Since Mahoney fails to disclose or suggest "grouping spatially connected ones of the elements into respective blobs based on the element labels assigned to the elements, wherein each of the blobs is assigned a respective one of at least two blob labels," Mahoney necessarily fails to disclose or suggest "processing ones of the elements based at least in part on the blob labels assigned to the blobs the and the element labels assigned to the elements."

In addition, contrary to the Examiner's assertion, col. 7, lines 6-15, does not disclose "processing ones of the elements based at least in part on the blob labels assigned to the blobs the

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and the element labels assigned to the elements." Instead, col. 7, lines 6-15, discloses that a connected component can include a connected set of pixels that have the same binary value, a connected component is treated as a unit, textual elements can be a component set, and a bounding box of a word or other component set is a rectangle that is just large enough to include all the pixels of the component set; this disclosure does not teach anything about blob labels assigned to blobs.

Thus, neither Al-Hussein nor Mahoney discloses or suggests any of the "grouping" and "processing" elements of independent claim 1. For at least this additional reason, the rejection of independent claim 1 under 35 U.S.C. § 103(a) over Al-Hussein in view of Mahoney should be withdrawn.

iv.   Conclusion

Thus, neither Al-Hussein nor Mahoney individually discloses any of the assigning, grouping, and processing elements of claim 1. Therefore, there is no combination of Al-Hussein and Mahoney that possibly could disclose any of these elements of claim 1. For at least these reasons, the rejection of independent claim 1 under 35 U.S.C. § 103(a) over Al-Hussein in view of Mahoney should be withdrawn.

c.   Applicant's rebuttal: at the time the invention was made there was no apparent reason to combine the teachings of Al-Hussein in view of Mahoney in the manner proposed by the Examiner

Contrary to the Examiner's position, at the time the invention was made there was no apparent reason to combine the teachings of Al-Hussein in view of Mahoney in the manner proposed by the Examiner.

The Examiner has stated that (see § 3 on page 6, first two full ¶¶ of the final Office action; emphasis added):

> Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the imaging apparatus of Al-Hussein to include: grouping spatially connected ones of the elements into respective blobs based on the element labels assigned to the elements, wherein each of the blobs is assigned a respective one of at least two blob labels; and

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processing ones of the elements based at least in part on the blob labels assigned to the blobs the and the element labels assigned to the elements.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified imaging device of Al-Hussein by the teaching Mahoney (196) because of the following reasons: It would have allowed to a user ensure that acquired image data will be of quality and a resolution suitable for the content of the image, even if the image contains text together with gray scale or color image or both.

This statement, however, does not explain how Mahoney's method for classifying non-running text in an image would have been combined with Al-Hussein's optical character recognition system to arrive at the inventive subject matter defined in claim 1. For example, the Examiner has not explained how the classifying operation of FIG. 2, block 66 and the output from FIG. 2, block 32 in Mahoney's method of extracting running text blocks could be combined with Al-Hussein's optical character recognition method. Clearly, it is not possible to say that it would have been obvious to one skilled in the art to combine the teachings of Al-Hussein and Mahoney without specifying the details of that proposed combination. In effect, without specifying the details of the proposed combination of the reference teachings that is envisioned by the Examiner, the Examiner's basis for rejecting claim 1 amounts to no more than an impermissible conclusory statement that cannot support a rejection under 35 U.S.C. § 103. See KSR Int'l Co. v. Teleflex Inc., No. 04-1350, slip op. at 14 (U.S. Apr. 30, 2007). In fact, the inability of the Examiner to articulate the details of his proposed combination evidences the unobviousness of the Examiner's proposed combination.

Furthermore, neither the cited references nor the knowledge generally available at the time the invention was made supports the asserted basis given by the Examiner support of his unspecified combination of Al-Hussein and Mahoney. In particular, the only support given by the Examiner for his conclusion that it would have been obvious to combine the teachings of Al-Hussein and Mahoney is because "It would have allowed to a user ensure that acquired image data will be of quality and a resolution suitable for the content of the image, even if the image contains text together with gray scale or color image or both" (see page 6, second full ¶ of the final Office action). Neither Al-Hussein nor Mahoney, however, discloses anything whatsoever

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that would have given anyone any reason to believe that combining Mahoney's method for classifying non-running text in an image would have been combined with Al-Hussein's optical character recognition system "would have allowed to a user ensure that acquired image data will be of quality and a resolution suitable for the content of the image." Therefore, there is no basis for the Examiner's conclusion that his unspecified combination of Al-Hussein and Mahoney "would have allowed to a user ensure that acquired image data will be of quality and a resolution suitable for the content of the image." In addition, neither of the cited reference even hints that there is a problem with the "quality and resolution" of the acquired image data input into Al-Hussein's optical character recognition system that needs to be solved, much less that somehow incorporating Mahoney's method for classifying non-running text in an image into Al-Hussein's optical character recognition system would solve such a non-existent problem. Furthermore, the possibility that the combined teaching "would have allowed to a user ensure that acquired image data will be of quality and a resolution suitable for the content of the image" does not constitute a showing of any apparent reason to modify the references or to combine the reference teachings, especially in light of the fact that the Al-Hussein's optical character recognition process operates on the input image data without regard to the nature of the textual data (e.g., running text or non-running text) contained in the image.

Finally, instead of pointing to some teaching or suggestion in Al-Hussein, Mahoney, or the knowledge generally available to support the proposed combination of Al-Hussein and Mahoney, the Examiner has relied on circular reasoning. In particular, the Examiner's proffered motivation (i.e., because it would have allowed to a user ensure that acquired image data will be of quality and a resolution suitable for the content of the image) assumes the result (i.e., the modification of Al-Hussein's system) to which the proffered "motivation" was supposed to have led one skilled in the art. Such circular reasoning cannot possibly support a rejection under 35 U.S.C. § 103(a). Indeed, such circular reasoning only evidences the fact that the Examiner improperly has engaged in impermissible hindsight reconstruction of the claimed invention, using applicants' disclosure as a blueprint for piecing together elements from the prior art in a manner that attempts to reconstruct the invention recited in claim 1 only with the benefit of impermissible hindsight (see KSR Int'l Co. v. Teleflex Inc., slip op. at 17: "A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments

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reliant upon ex post reasoning."). The fact is that none of the cited references nor the knowledge generally available at the time the invention was made would have led one skilled in the art to believe that there was any problem to be solved or any advantage that would be gained by the Examiner's proposed modification of Al-Hussein's system.

For the reasons explained above, the Examiner' rationale in support of his unspecified combination of Al-Hussein and Mahoney amounts to no more than an impermissible conclusory statement, which cannot establish that one skilled in the art would have had any apparent reason to combine Al-Hussein and Mahoney in the manner proposed by the Examiner. See In re Kahn, 441 F. 3d 977, 988 (CA Fed. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness").

For at least these additional reasons, the rejection of independent claim 1 under 35 U.S.C. § 103(a) over Al-Hussein in view of Mahoney should be withdrawn.

> e. The Examiner's reply to Applicant's arguments and Applicant's response to that reply

The Examiner has responded to Applicant's explanation that Al-Hussein and Mahoney, taken either alone or in any permissible combination, do not disclose or suggest the assigning element of claim 1 with the following statement (§ 1 on page 3 of the final Office action; emphasis added):

> Al-Hussein '978' when considered as a whole clearly teaches that"
> a method of processing an image of an element, (image scanned by
> scanner section 22 of fig 5, received by computer 20 of fig 5, for
> further processing, see col.8, lines 63-68), comprising: assigning
> each of multiple ones of the elements (pixels of image) a
> respective element label selected from a set of at least three
> element labels that includes at least one edge element label
> (computer receive scanned image from a scanner, assign image
> pixel for further processing, according to pixel selected, see col.3,
> lines 54-56 and col.2, lines 25-32). "as currently amended in
> claims 1, are well-known in the art at the time of the invention was
> made. ...

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In this statement, however, the Examiner merely re-asserted his belief that Al-Hussein discloses the "assigning" element in col. 3, lines 54-56 and col. 2, lines 25-32. Inexplicably, the Examiner did not provide any argument or evidence in rebuttal to Applicant's explanation of the reasons why these same cited sections of Al-Hussein's disclosure do not in fact disclose or suggest the "assigning" element of claim 1.

The Examiner has responded to Applicant's explanation that Al-Hussein and Mahoney, taken either alone or in any permissible combination, do not disclose or suggest the grouping element of claim 1 with the following statement (§ 1 on page 3 of the final Office action; emphasis added):

> ... Mahoney (196), clearly suggested the advantage of combining of a document image capture method and an image processing as shown in fig 1, grouping spatially connected ones of the elements into respective blobs based on the element labels assigned to the elements, i.e., pixels are classifying operation 66 of fig 2, wherein each of the blobs is assigned a respective one of at least two blob labels i.e., the out put from process 32 of fig 2 is set of connected components or "blob", see col.8, lines 62-6...

In this statement, however, the Examiner merely re-asserted his belief that the classifying operation 66 in FIG. 2 and the output from process 32 of FIG. 2 of Mahoney discloses the "grouping" element of claim 1. Inexplicably, the Examiner did not provide any argument or evidence in rebuttal to Applicant's explanation of the reasons why these same cited sections of Mahoney's disclosure do not in fact disclose or suggest the "grouping" element of claim 1.

In response to Applicant's explanation that neither Al-Hussein nor Mahoney discloses or suggests the "processing" element of claim 1, the Examiner simply re-asserted his belief that Mahoney discloses the "processing" element in col. 7, lines 6-15. As explained above, however, this disclosure does not teach anything about blob labels assigned to blobs. Instead, in col. 7, lines 6-15, Mahoney simply discloses that a connected component can include a connected set of pixels that have the same binary value, a connected component is treated as a unit, textual elements can be a component set, and a bounding box of a word or other component set is a rectangle that is just large enough to include all the pixels of the component set.

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f.   Conclusion

For the reasons explained above, the rejection of independent claim 1 under 35 U.S.C. §
103(a) over Al-Hussein in view of Mahoney should be withdrawn because Al-Hussein and
Mahoney, taken either alone or in any permissible combination, do not disclose or suggest all the
elements of the claimed invention. The rejection of independent claim 1 also should be
withdrawn because at the time the invention was made there was no apparent reason to combine
the teachings of Al-Hussein in view of Mahoney in the manner proposed by the Examiner.

2.   Claims 3-6, 8-12, 14-16, and 23

a.   Introduction

Each of claims 3-6, 8-12, 14-16, and 23 incorporates the elements of independent claim 1
and therefore is patentable over Al-Hussein in view of Mahoney for at least the same reasons
explained above.

Claims 5, 6, 11, 12, and 23 also are patentable over Al-Hussein in view of Mahoney for
the following additional reasons.

b.   Claim 5

Claim 5 recites that the assigning comprises determining a black threshold value from the
determined white threshold value. Claim 5 depends from claim 4, which recites that the
assigning comprises determining a white threshold value from luminance values associated with
ones of the elements.

The Examiner has taken the position that Al-Hussein discloses the elements of claim 5 in
col. 18, lines 10-12 (see page 7 of the final Office action). Contrary to the Examiner's position,
however, col. 18, lines 10-12, does not disclose separate white and black threshold values.
Instead, col. 18, lines 10-12, discloses only a single global threshold value for binarizing
grayscale pixels of an image into ones and zeros.

Thus, the Examiner has not shown that Al-Hussein in view of Mahoney discloses each
and every element of claim 5. For at least this additional reason, the rejection of claim 5 under
35 U.S.C. § 103(a) over Al-Hussein in view of Mahoney should be withdrawn.

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c.   Claim 6

Claim 6 depends from claim 1 and recites that the assigning comprises determining a color threshold based at least in part on color values respectively associated with ones of the elements.

The Examiner has taken the position that Al-Hussein discloses the elements of claim 6 in col. 2, lines 45-48 (see page 7 of the final Office action). Contrary to the Examiner's position, however, col. 2, lines 45-48, does not disclose anything about a color threshold. Instead, col. 2, lines 45-48, simply discloses that a picture block 13 of a document 10 includes a color or halftone picture.

Thus, the Examiner has not shown that Al-Hussein in view of Mahoney discloses each and every element of claim 6. For at least this additional reason, the rejection of claim 6 under 35 U.S.C. § 103(a) over Al-Hussein in view of Mahoney should be withdrawn.

d.   Claim 11

Claim 11 depends from claim 8 and recites that the labeling comprises assigning each of multiple ones of the elements a respective one of a black element label, a white element label, and a gray element label based on comparisons of the luminance values to a white threshold and a black threshold.

In support of the rejection of claim 11, the Examiner has stated that (see page 8, first ¶ of the final Office action):

> With respect to claim 11, Al-Hussein et al. discloses the method
> (as shown in fig 1), wherein the labeling comprises step of
> assigning to each of multiple ones of the pixel elements of a
> respective one of a black element label, a white element label, and
> a gray element label based on comparisons of the luminance values
> to a white threshold and a black threshold, (pixel set to binary 1 ",
> if pixel is black) pixel is white, see (col.12, lines 51-54).

On its face, this statement does not show that Al-Hussein discloses "assigning each of multiple ones of the elements a respective one of a black element label, a white element label, and a gray element label based on comparisons of the luminance values to a white threshold and

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a black threshold." Instead, the Examiner merely has shown that Al-Hussein discloses assigning white and black labels to pixels. Thus, the Examiner has not established a *prima facie* case that claim 11 is obvious over Al-Hussein in view of Mahoney.

Moreover, Al-Hussein does not disclose the elements of claim 11. For example, Al-Hussein does not disclose or suggest separate white and black thresholds, nor does Al-Hussein disclose or suggest "assigning each of multiple ones of the elements a respective one of a black element label, a white element label, and a gray element label." Instead, in col. 12, lines 51-54, al-Hussein discloses that a grayscale image is binarized by comparing the grayscale pixel values to a single threshold.

Thus, the Examiner has not shown that Al-Hussein in view of Mahoney discloses each and every element of claim 11. For at least this additional reason, the rejection of claim 11 under 35 U.S.C. § 103(a) over Al-Hussein in view of Mahoney should be withdrawn.

e.   Claim 12

Claim 12 depends from claim 1 and recites that the labeling comprises assigning each of multiple ones of the elements a respective one of a black element label, a white element label, and a color element label.

In support of the rejection of claim 12, the Examiner has stated that (see page 8, second ¶ of the final Office action):

> With respect to claim 12, Al-Hussein et al. discloses the method
> (as shown in fig 5), wherein the labeling comprises assigning to-
> each of multiple ones of the elements a respective one of a black
> element labels, a white element label, and a color element label,
> see (col.17, lines 33-38), see also col.3, lines 45-48).

Contrary to the Examiner's statement, Al-Hussein does not disclose the elements of claim 12 in col. 17, lines 33-38 and col. 3, lines 45-48.

In col. 17, lines 33-38, Al-Hussein discloses that the first step of the binarization process involves creating a histogram of grayscale pixel values in the image. None of the bins (or "groupings") of the histograms is assigned a label; instead, the pixels are labeled "white" and

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"black" only after the threshold has been determined based on the histogram (see col. 17, line 21 - col. 18, line 13).

In col. 3, lines 45-48, Al-Hussein discloses "Preferably, pixel shifting of columns of the image is carried out in blank areas between characters in the image so that characters are not distorted by the pixel shiftings." This disclosure has nothing whatsoever to do with assigning labels to pixels; instead, it describes a method of de-skewing an image (see, e.g., col. 3, lines 35-45).

Thus, the Examiner has not shown that Al-Hussein in view of Mahoney discloses each and every element of claim 12. For at least this additional reason, the rejection of claim 12 under 35 U.S.C. § 103(a) over Al-Hussein in view of Mahoney should be withdrawn.

f.   Claim 23

Claim 23 depends from claim 1 and recites that the assigning comprises applying a gradient operator to ones of the elements to produce gradient data and labeling ones of the elements with the edge element label based on the gradient data.

In support of the rejection of claim 23, the Examiner has stated that (see page 9, first ¶ of the final Office action):

> With respect to claim 23, Al-Hussein et al. discloses the method (as shown in fig 5), wherein the assigning comprises applying a gradient operator to ones of the elements to produce gradient data and labeling ones of the elements with the edge element label based on the gradient data, see (col.17, lines 33-38), see also col.3, lines 45-48).

Contrary to the Examiner's statement, Al-Hussein does not disclose the elements of claim 12 in col. 17, lines 33-38 and col. 3, lines 45-48.

In col. 17, lines 33-38, Al-Hussein discloses that the first step of the binarization process involves creating a histogram of grayscale pixel values in the image. None of the bins (or "groupings") of the histograms is assigned a label; instead, the pixels are labeled "white" and "black" only after the threshold has been determined based on the histogram (see col. 17, line 21 - col. 18, line 13). This disclosure has nothing whatsoever to do with "applying a gradient

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operator to ones of the elements to produce gradient data and labeling ones of the elements with the edge element label based on the gradient data."

In col. 3, lines 45-48, Al-Hussein discloses "Preferably, pixel shifting of columns of the image is carried out in blank areas between characters in the image so that characters are not distorted by the pixel shiftings." This disclosure has nothing whatsoever to do with "applying a gradient operator to ones of the elements to produce gradient data and labeling ones of the elements with the edge element label based on the gradient data." Instead, it describes a method of de-skewing an image (see, e.g., col. 3, lines 35-45).

Thus, the Examiner has not shown that Al-Hussein in view of Mahoney discloses each and every element of claim 23. For at least this additional reason, the rejection of claim 23 under 35 U.S.C. § 103(a) over Al-Hussein in view of Mahoney should be withdrawn.

III. Conclusion

For the reasons explained above, all of the pending claims are now in condition for allowance and should be allowed.

Charge any excess fees or apply any credits to Deposit Account No. 08-2025.

Respectfully submitted,

Date: October 16, 2008

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